

black, a pale border around lower jaw. Belly pale fawn-brown with faint red-brown blotches which fade in preservative. Legs black except for lower surfaces of thigh which are coloured like belly though more reddish. Length, snout to vent 19.1 mm.

Type locality: A shallow valley on left bank of Deep River on western boundary of Nornalup National Park, where the Manjimup to Denmark road enters the park. Other specimens examined; males 2, females 3, juv. 4. These specimens agree with holotype with the following exceptions: Females lack the dark throat of males. Smaller specimens have pink spots on dorsum and flanks and a pink area on anterior of forearm and adjacent ventral surface. Also the dorsal pattern is outlined in pinkish grey. The length of the first finger and toe is very variable ranging from $\frac{1}{2}$ to $\frac{3}{4}$ length of second finger. Some of the specimens have pale tri-radial mark extending between eyes and down snout.

This species is morphologically close to both *Crinia rosea* and *Crinia luevis* (Günther). From the former it can be distinguished by the fawn colour of the venter, smaller size, variable first finger and toe and from the latter by the paler relatively uniform colouration of the belly, smaller size and variable but larger first finger and toe.

The calls have been heard but not recorded on tape. *Crinia lutea* has a call similar to that of *Crinia rosea* but repeated more rapidly.

Habitat: Adjacent to a small stream in a broad shallow valley floor of peaty sand. Dominant vegetation Restionaceae, *Viminaria*, *Juncus*, etc., completely matted above, light does not reach soil surface which is series of pits and hummocks of mud. Male frog calls from tunnels near top of hummocks of mud or clay (to which the species name is an allusion). A number of similar tunnels were found to contain egg masses of 25 to 30 eggs. Larvae develop in the egg capsules without entering water. Early stage larvae, collected October 23, 1962, completed development December 10, 1962. In its larval life this species resembles *Crinia rosea*. However, the eggs of the latter appear to be always in a shallow depression and not tunnels as has been observed with *Crinia lutea*. *Crinia lutea* has not been heard calling or collected outside the type locality. As the distribution is at present known it is easily the most restricted of all frog species in Western Australia.

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NOTES ON THE HERPETOFAUNA OF WESTERN AUSTRALIA

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Only two scincid lizard species belonging to the large subgroup *Heteropus* of the genus *Leiopisma* have been recorded from Western Australia (Glauert, 1961, p. 75). The distribution of this subgroup in Western Australia was thought to be confined solely to the Kimberleys and appeared to typify the western extreme of

the Torresian Zoogeographic Subregion in its classical sense. The following additional localities for the two previously recorded species plus the occurrence of a third form known only from the Northern Territory, expand the range of this section of the genus *Leiopisma* approximately 600 miles south-west of the Kimberley region. These range extensions only preclude the use of *Heteropus* as an example of the Torresian Subregion if we think of such areas statically in a single plane of time and not historically as major sources of faunal origin.

Leiopisma pectoralis (De Vis)

1. Adult female (gravid): 6 miles south of Vlaming Head, North West Cape, Sept. 19, 1961.

Salient characters: four supralabials anterior to subocular; four supraciliaries; small lobule present on anterior margin of ear opening; dorsal and lateral body scales cycloid, smooth, becoming weakly triearinate posteriorly; midbody scales in twenty-eight rows; subdigital lamellar formula for fore limb 6-11-16-6, hind limb 6-10-16-24-13; uniform brown dorsally, blue ventrally; distinct white subocular stripe continues to dorsal margin of ear opening and from its ventral margin to fore limb insertion; snout-vent length 39 mm., tail length 43 mm. (incomplete).

2. Juvenile male: 18 miles south south-west of Learmonth (Rough Range), North West Cape, Sept. 23, 1961.

Salient characters: three/four supralabials anterior to subocular (left and right sides respectively); four supraciliaries; small lobule present on anterior margin of ear opening; dorsal body scales cycloid, tricarinate, keels of lateral body scales being broken up into a series of points; midbody scales in thirty rows; subdigital lamellar formula for fore limb 6-12-17-7, hind limb 5-11-18-23-13; colour as for adult female; snout-vent length 27 mm., tail length 48 mm.

These two specimens from the North West Cape compare favourably with examples of typical *pectoralis* from Adelaide River, Northern Territory and Innisfail, Queensland (Mitchell, *in litt.*). The major differences are the shape and type of keeling of the dorsal and lateral body scales. In both Western Australian examples the body scales appear to be slightly more rounded than normal which is probably correlated with the reduced nature of the keels. The peculiar type of lateral body keeling found in the juvenile male has only been recorded in the *Heteropus* subgroup in *coense* from Coen, Queensland. A comparison of the North West Cape specimens with the series of *pectoralis* recorded by Glaucert (1961) from Kalumburu Mission, Drysdale River, also reveals minor, yet consistent, morphological differences between the two populations. The Kalumburu Mission specimens are also slightly different from the Adelaide River and Innisfail material. There is some suggestion that the distribution of *pectoralis* is very fragmentary in western Australia. Each population appears to be slightly different morphologically which could indicate a series of incipient species.

The two specimens of *pectoralis* from the North West Cape were collected during the day among debris along the banks of dry creek beds. Both specimens appeared to be actively foraging for food.

Leiopisma triacantha Mitchell

1. Adult female: 3 miles south of Mundiwindi (new location), Feb. 26, 1962.

Salient characters: four/five supralabials anterior to subocular; five supraciliaries; prominent lobule present on anterior margin of ear opening, posterior margin slightly denticulate; dorsal and lateral body scales strongly tricarinate with slightly emarginate posterior borders; midbody scales in thirty rows; subdigital lamellar formula for fore limb 9-15-17-9, hind limb 6-12-19-23-13; anal scales slightly enlarged; distance between tip of snout and fore limb less than that between axilla and groin; adpressed hind limb reaches axilla; dorsal body colour uniform light brown with irregularly distributed black-pointed scales; ventral surfaces bluish-white; snout-vent length 40 mm., tail length 69 mm.

2. Adult female: Cockatoo Island, West Kimberley.

Salient characters: four supralabials anterior to subocular; five supraciliaries; prominent lobule present on anterior margin of ear opening, dorsal margin strongly denticulate; dorsal and lateral body scales strongly tricarinate with moderately emarginate posterior borders; midbody scales in thirty rows; subdigital lamellar formula for fore limb 9-14-17-9, hind limb 6-12-19-23-14; anal scales not enlarged; distance between tip of snout and fore limb less than that between axilla and groin; adpressed hind limb does not reach axilla; dorsal body colour greenish-bronze with irregularly distributed light blue scales with dark brown margins; ventral surfaces bluish-white; snout-vent length 48 mm., tail length 86 mm.

The major differences between the Western Australian specimens and the original description of *triacantha* are the presence of lobules on the margins of the ear opening and in certain body proportions. In the type description of *triacantha*, Mitchell (1953) stated that the distance between the tip of the snout and the fore limb was equal to that between the axilla and the groin and that the adpressed hind limb reached beyond the axilla. The different proportions found in the Western Australian material are probably the single product of a slightly longer body.

Leiopisma triacantha was previously known only from Adelaide River and Darwin, Northern Territory.

The Mundiwindi specimen was collected at night among eucalypt debris marginal to a *Triodia* flat.

Leiopisma vivax is the only other species of the *Heteropus* subgroup thus far recorded from Western Australia. Glauert (1961) incorrectly identified as *peroni* a single specimen of *vivax* from Wotjulum Mission, West Kimberley. Recently, an additional example of *vivax* was collected on East Woody Island, Collier Bay,

West Kimberley. In all major characters the Western Australian material of *vivax* falls within the range of variation discussed by Mitchell (1953) for that species.

Keast (1962, p. 402, fig. 8) showed *Leiopisma* (*Heteropus*) *fuscum* as far west as North West Cape, Western Australia. To my knowledge, *fuscum* has not been collected in Australia west of Arnhem Land, Northern Territory.

LITERATURE CITED

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FROM FIELD AND STUDY

A Record of the Euro near Merredin.—Barker (*W. Aust. Nat.*, 6, 1958: 54) records the occurrence of the Euro (*Macropus robustus*) at Mokine and McMillan (*ibid.* 8, 1962: 101) reports the animal from Culham. On August 22, 1962, I saw a male Euro lying dead by the roadside about 15 miles north-east of Merredin in the Goomerin area. The identification was verified by checking the coarse reddish-brown fur and naked muzzle at close quarters. The adjacent country was scrub plain quite unlike the wandoos break-away described by Barker and McMillan.

—C. F. H. JENKINS, South Perth.

Birds Attacking Swamp Tortoise.—V. N. Serventy (*W.A. Nat.*, 7: 167) reported on Swamp Tortoises (*Chelodina oblonga*) attacking birds in water. I now record a case of birds attacking a Swamp Tortoise on land.

On October 12, 1961, a tortoise was sighted moving away from the swamp toward the river bank behind Guildford Grammar School. It was under constant attack by four Magpies (*Gymnorhina dorsalis*), the birds diving on the animal from behind trying to peek its head. It was too quick for them, however, and at each attack the head was swiftly tucked into the protection of the earapace. At no time was a frontal attack made. The tortoise eventually reached shelter in long grass and the birds dispersed.

—PETER McMILLAN, Guildford.

Fork-tailed Swift on Rottnest Island.—Ford (*W.A. Nat.*, 1957, 6: 106-107) reported the occurrence of the Fork-tailed Swift (*Apus pacificus*) on Rottnest Island. I made a similar sighting of these birds on Rottnest from January 1-7, 1962.

The Swifts, approximately 100 in number, were hawking over most of the island during the daytime. In the late afternoon they